

# Fact Sheet

## SOIL EROSION AND SLOPE STABILIZATION

### PROBLEM

An important part of land repair and maintenance at Army sites is the control of soil erosion and re-establishment of vegetation to reduce erosion potential on previously damaged lands. CRREL's slope-stabilization projects address the development of safe and cost-effective revegetation techniques to retard severe soil erosion occurring in the arid, cold climate of Yakima Training Center (YTC), Washington, and on earth-covered magazines (ECMs).

### SOLUTION

Surface soil temperatures on ECMs vary widely, causing microclimates that are detrimental to plant survival. Research studies at Bluegrass Army Depot (BGAD) on ECMs used various grass/legume mixes, mulching techniques, and soil covers to evaluate plant species that could provide a low-cost ground cover. The results of this research and knowledge, acquired from a survey of all Army Materiel Command (AMC) facilities, were used to develop guidelines to assist land managers in establishing and maintaining vegetation on slopes. Current research is developing suitable plant materials and examining impacts of topography (slope aspect), soil type, temperature, and moisture on soil erosion, and determining which techniques might avoid these problems.

YTC's arid, cold climate and naturally sparse vegetative cover is typical of many western U.S. range lands. These conditions make the area highly susceptible to land surface degradation, channel bank erosion, and instability. At YTC, CRREL is addressing more effective soil erosion control with new plants developed through plant breeding (as described in the related Plant Breeding project) and better understanding of soil erosion processes, as well as an improved capability to predict soil erosion location and severity. Studies will include examining relationships between plant cover, vegetation damage, climate, surface water runoff, and erosion processes, and refinement of the Water Erosion Prediction Project (WEPP), Revised Universal Soil Loss Equation (RUSLE), and CASC2D models to portray changes at YTC.

### RESULTS

A.J. Palazzo, L.W. Gatto, and W. Woodson (1994) Guidelines for managing vegetation on earth-covered magazines within the U.S. Army Materiel Command. U.S. Army Cold Regions Research and Engineering Laboratory, CRREL Report 94-6.

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February 1999



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